

OMS On-Demand (Poll)

Version 3.0

May 13th, 2010

1 Descriptions of Function

All prior work (intellectual property of the company or individual) or proprietary (non-publicly available) work should be so noted.

1.1 Function Name

OMS On-Demand Poll

1.2 Function ID

Identification number of the function

1.3 Brief Description

The on-demand polling by the Outage Management System (OMS) is used in similar circumstances as a ping from the OMS. With the deployment of Smart Grid and AMI the utility has the ability for network operators to proactively manage large and complex networks in a more advance way. Today's AMI technology capabilities allow the network operators to:

- Ability to Poll any Device or Meter at any time
- Ability to Poll a meter & verify a no-light call
- Ability to evaluate the entire circuit or feeder
- Provide the network operator with prediction validation
- Provide additional information for locating the faulted device
- Outage restoration verification
- Identification of potential nested outages
- Improved Network Operator System Visualization

Once the Operations Management System (OMS) software is integrated with the AMI system the network operations personnel can automatically poll the customer's meter and verify the status of the meter. If the customer's meter polls in-service, the call & order can

be cancelled which avoids a crew being dispatched to the site. The added advantage to polling over sending a ping to the NIC - ESP is:

- The return value is an actual voltage read. Other data may be returned as well.
- The polling of the meter verifies the meter as well as the NIC.
- There currently exists an actual CIM message for polling of a meter.

1.4 Narrative

The ***Outage Management System (OMS)*** issues a polling request to the ***AMI Head-End*** through the ***Meter Outage Processor (MOP)***. The polling request travels through the ***AMI Head-End*** to the ***NIC ESP*** card on the ***Smart Meter***. The ***NIC ESP*** transmits the polling request to the ***Meter Metrology Board*** where the voltage is actually read and returns the value to the ***NIC ESP***. The ***NIC ESP*** sends the meter reading back up through the AMI Network to the ***AMI Head-End***. The ***AMI Head-End*** sends the meter reading to the ***MOP*** where it is relayed to the ***OMS***.

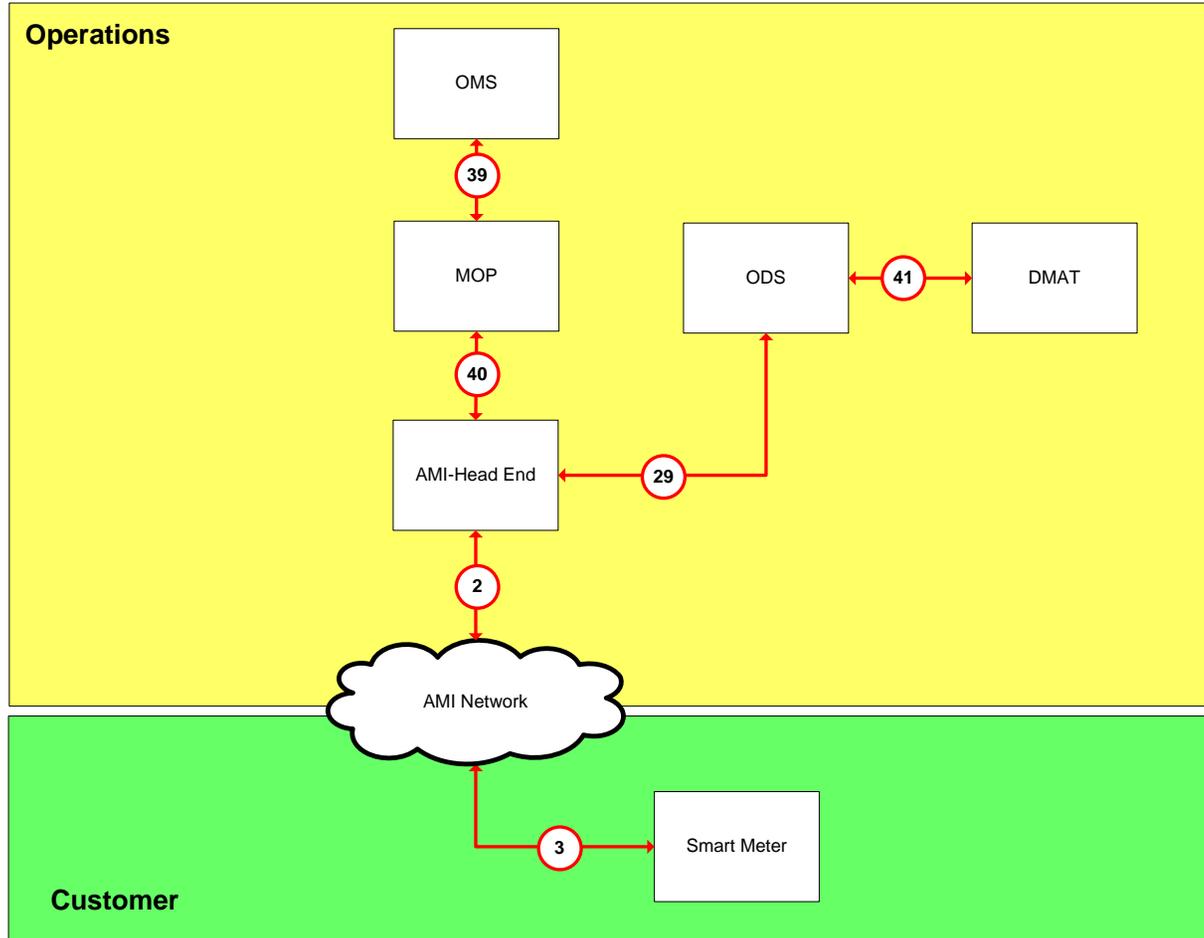


Figure 1-1
Context Diagram for Outage Management System Poll

1.5 Actor (Stakeholder) Roles

| <i>Grouping (Community)</i> | | <i>Group Description</i> |
|-----------------------------|--|---|
| | | |
| <i>Actor Name</i> | <i>Actor Type (person, organization, device, system, or subsystem)</i> | <i>Actor Description</i> |
| Customer | | |
| CSR | | Customer Service Representative |
| OMS | Sub-System | Operational Data Store is a sub-system of The Utility's data warehouse, which stores operational data i.e. all metering events and messages. |
| MOP | Sub-System | Meter Outage Processor is a sub-system of the OMS - Meter event filter that determines whether the outages are spurious events or real outages. |
| AMI Head-End | System | The AMI Head-End is the back office system than controls the Advanced Metering Infrastructure. |
| NIC - ESP | Device | AMI side of the network interface card within the smart meter. |
| Meter Metrology Board | Device | The board, internal to the smart meter, on which the functions of the smart meter are configured and performed. |
| | | |

1.6 Information exchanged

| <i>Information Object Name</i> | <i>Information Object Description</i> |
|--------------------------------|---------------------------------------|
| getMeterReadings | 61968 format to get a meter reading |

| <i>Information Object Name</i> | <i>Information Object Description</i> |
|--------------------------------|---|
| C12.18 command to read table | Specific table read |
| Meter Reading | Meter reading from a specific smart meter |
| C12.19 read table format | Specific table read |
| meterReadings | 61968 format for meter reading |

1.7 Activities/Services

| <i>Activity/Service Name</i> | <i>Activities/Services Provided</i> |
|------------------------------|-------------------------------------|
| | |

1.8 Contracts/Regulations

| <i>Contract/Regulation</i> | <i>Impact of Contract/Regulation on Function</i> |
|----------------------------|--|
| | |

| <i>Policy</i> | <i>From Actor</i> | <i>May</i> | <i>Shall Not</i> | <i>Shall</i> | <i>Description (verb)</i> | <i>To Actor</i> |
|---------------|-------------------|------------|------------------|--------------|---------------------------|-----------------|
| | | | | | | |

| <i>Constraint</i> | <i>Type</i> | <i>Description</i> | <i>Applies to</i> |
|-------------------|-------------|--------------------|-------------------|
| | | | |

2 Step by Step Analysis of Function

Describe steps that implement the function. If there is more than one set of steps that are relevant, make a copy of the following section grouping (Steps to implement function, Preconditions and Assumptions, Steps normal sequence, Post-conditions) and provide each copy with its own sequence name.

2.1 Steps to implement function – Name of Sequence

Name of this sequence.

2.2 Preconditions and Assumptions

| <i>Actor/System/Information/Contract</i> | <i>Preconditions or Assumptions</i> |
|--|-------------------------------------|
| | |
| | |

2.2.1 Steps – Name of Sequence

Describe the normal sequence of events, focusing on steps that identify new types of information or new information exchanges or new interface issues to address. Should the sequence require detailed steps that are also used by other functions, consider creating a new “sub” function, then referring to that “subroutine” in this function. Remember that the focus should be less on the algorithms of the applications and more on the interactions and information flows between “entities”, e.g. people, systems, applications, data bases, etc. There should be a direct link between the narrative and these steps.

| # | Event | Primary Actor | Name of Process/Activity | Description of Process/Activity | Information Producer | Information Receiver | Name of Info Exchanged | Additional Notes | IECSA Environment |
|-----|--|--|---|--|---|--|---|---|---|
| # | <i>Triggering event? Identify the name of the event.¹</i> | <i>What other actors are primarily responsible for the Process/Activity? Actors are defined in section0.</i> | <i>Label that would appear in a process diagram. Use action verbs when naming activity.</i> | <i>Describe the actions that take place in active and present tense. The step should be a descriptive noun/verb phrase that portrays an outline summary of the step. "If ...Then...Else" scenarios can be captured as multiple Actions or as separate steps.</i> | <i>What other actors are primarily responsible for Producing the information? Actors are defined in section0.</i> | <i>What other actors are primarily responsible for Receiving the information? Actors are defined in section0. (Note – May leave blank if same as Primary Actor)</i> | <i>Name of the information object. Information objects are defined in section 1.6</i> | <i>Elaborate architectural issues using attached spreadsheet. Use this column to elaborate details that aren't captured in the spreadsheet.</i> | <i>Reference the applicable IECSA Environment containing this data exchange. Only one environment per step.</i> |
| 1.1 | DDC manually initiates a poll thru OMS for one or more meters | OMS | On-Demand Poll | DDC polls one or more Smart Meters via the OMS | DDC | OMS | getMeterReadings | | |
| 1.2 | | OMS | OMS issues a getMeterReadings request | OMS issues a getMeterReadings request to MOP | OMS | MOP | getMeterReadings | 61968 | |
| 1.3 | | MOP | MOP issues a getMeterReadings request | MOP issues a getMeterReadings request to AMI Head-End via ESB | MOP | AMI Head-End | getMeterReadings | 61968 | |
| 1.4 | | AMI Head-End | AMI Head-End issues a getMeterReadings request | AMI Head-End issues a getMeterReadings request to AMI Network | AMI Head-End | AMI Network | getMeterReadings | Use AMI Network Use Case | |

¹ Note – A triggering event is not necessary if the completion of the prior step – leads to the transition of the following step.

| # | Event | Primary Actor | Name of Process/Activity | Description of Process/Activity | Information Producer | Information Receiver | Name of Info Exchanged | Additional Notes | IECSA Environment |
|------|-------|-----------------------|---|--|-----------------------|-----------------------|------------------------------|--------------------------|-------------------|
| 1.5 | | AMI Network | AMI Network issues a getMeterReadings request | AMI Network issues a getMeterReadings request to NIC - ESP | AMI Network | NIC - ESP | getMeterReadings | | |
| 1.6 | | NIC – ESP | issues a meter read request | NIC – ESP issues a meter read request to Meter Metrology Board | NIC – ESP | Meter Metrology Board | C12.18 command to read table | C12.18 C12.19 | |
| 1.7 | | Meter Metrology Board | Meter Metrology Board performs accordingly | Meter Metrology Board performs accordingly | Meter Metrology Board | Meter Metrology Board | Meter Reading | | |
| 1.8 | | Meter Metrology Board | Meter Metrology Board returns meter reading | Meter Metrology Board returns meter reading to NIC - ESP | Meter Metrology Board | NIC - ESP | C12.19 read table format | | |
| 1.9 | | NIC - ESP | NIC - ESP transmits meter reading | NIC - ESP transmits meter reading to AMI Network | NIC - ESP | AMI Network | C12.19 read table format | Use AMI Network Use Case | |
| 1.10 | | AMI Network | AMI Network transfers meter reading | AMI Network transfers meter reading to AMI Head-End | AMI Network | AMI Head-End | meterReadings | | |
| 1.11 | | AMI Head-End | AMI Head-End transfers meter reading | AMI Head-End transfers meter reading to MOP | AMI Head-End | MOP | meterReadings | 61968 | |

| # | Event | Primary Actor | Name of Process/Activity | Description of Process/Activity | Information Producer | Information Receiver | Name of Info Exchanged | Additional Notes | IECSA Environment |
|------|-------|---------------|--------------------------------------|---|----------------------|----------------------|------------------------|------------------|-------------------|
| 1.12 | | MOP | MOP transfers meter reading | MOP transfers meter reading to OMS | MOP | OMS | meterReadings | 61968 | |
| 1.13 | | AMI Head-End | AMI Head-End transfers meter reading | AMI Head-End transfers meter reading to ODS | AMI Head-End | ODS | meterReadings | 61968 Events | |
| 1.14 | | ODS | ODS transfers meter reading | ODS transfers meter reading to DMAT | ODS | DMAT | meterReadings | | |
| | | | | | | | | | |

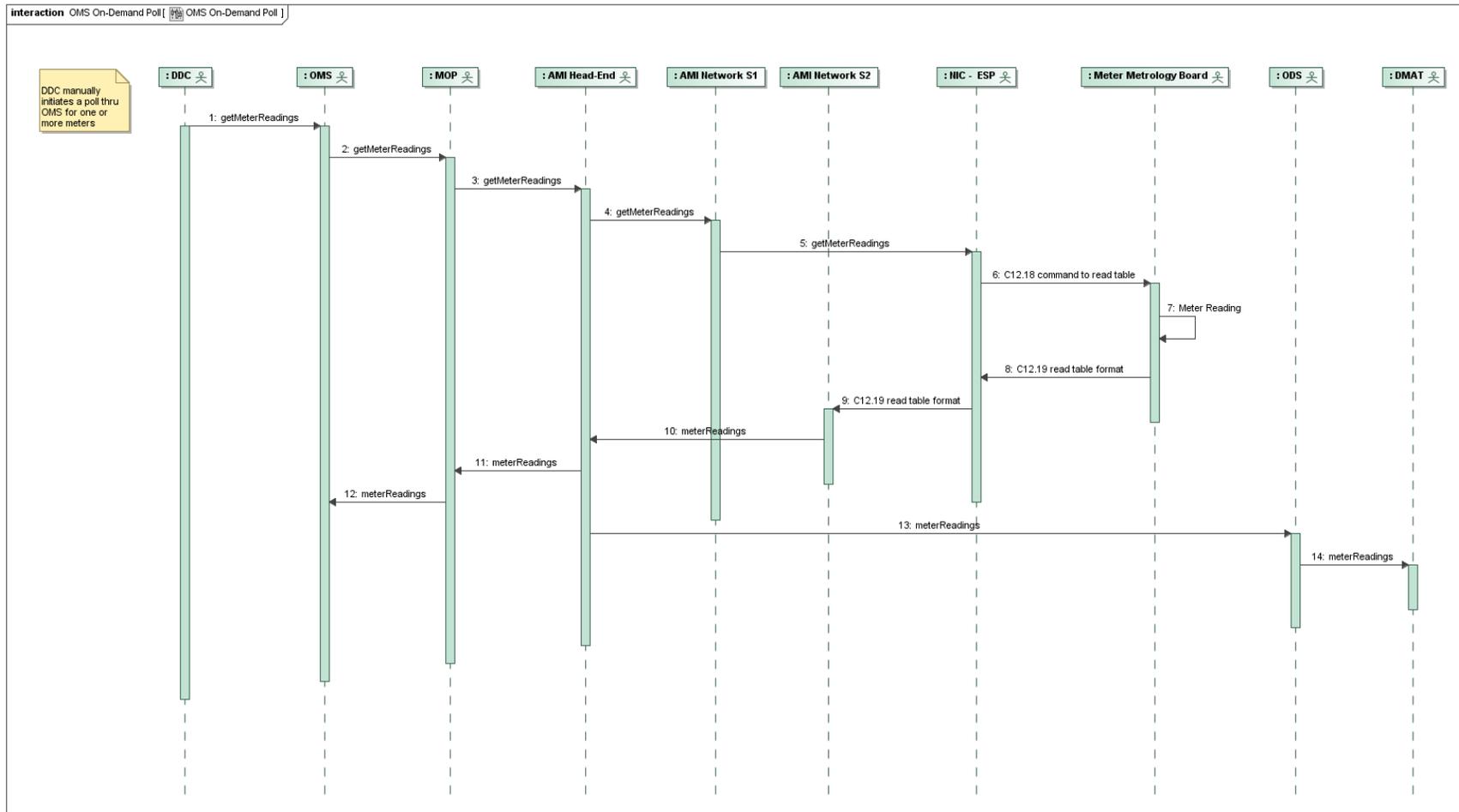
2.2.2 Post-conditions and Significant Results

| <i>Actor/Activity</i> | <i>Post-conditions Description and Results</i> |
|-----------------------|--|
| | |

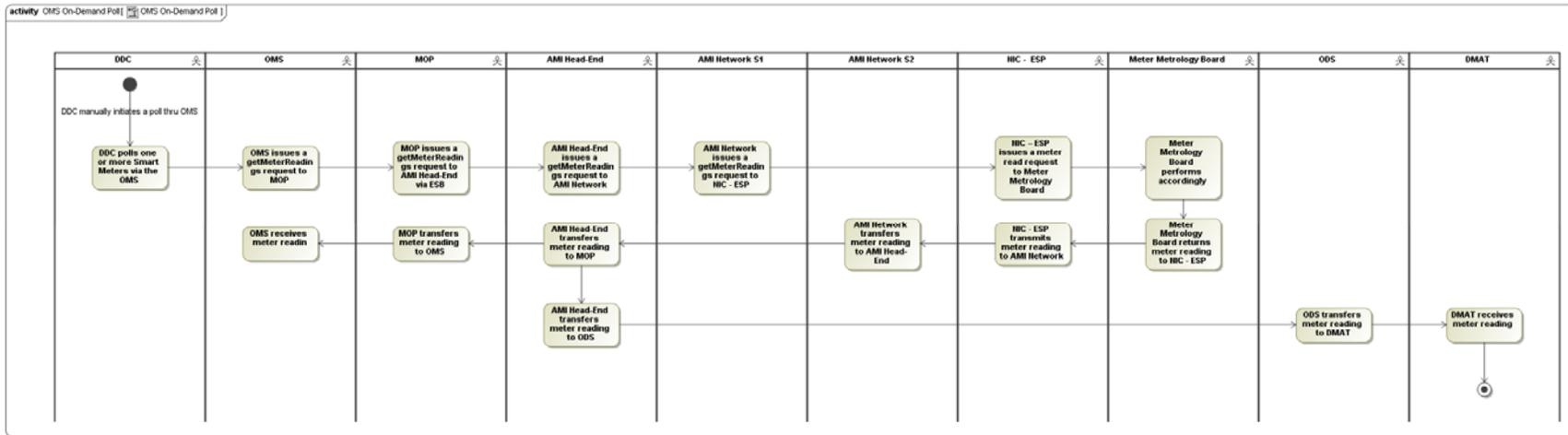
2.3 Architectural Issues in Interactions

Elaborate on all architectural issues in each of the steps outlined in each of the sequences above. Reference the Step by number.

2.4 Diagram



OMS On-Demand Poll Sequence Diagram



OMS On-Demand Poll Activity Diagram

3 Auxiliary Issues

3.1 References and contacts

| ID | Title or contact | Reference or contact information |
|-----|------------------|----------------------------------|
| [1] | | |

3.2 Action Item List

| ID | Description | Status |
|-----|-------------|--------|
| [1] | | |

3.3 Revision History

| No | Date | Author | Description |
|-----------|-------------|-----------------|---|
| 2.0 | 4-10-2010 | John J. Simmins | Create Brief Description and Narrative. Fill in blanks. |
| 3.0 | 5-13-2010 | Brian D. Green | Revisions and add diagrams |